Intel® Intelligent System Extended Form Factor Reference Design

Accelerating the time to market, and enabling customization and differentiation to amplify the value of intelligent systems with Intel® Intelligent System Extended Form Factor Reference Design program.

A leading market research company reports that embedded design houses are turning to reference designs and looking for opportunities to offer product differentiation to drive profits. At the same time, to accelerate time to market, to seize the opportunity for pre-sales designs, and to deliver consulting services are also important expectations from embedded design houses.

The Intel® Intelligent System Extended Form Factor Reference Design (Intel® ISX Form Factor Reference Design) program introduces a new, exceptionally small reference design built on a powerful Intel® architecture platform. Packing so much computing power into a small form factor, the Intel® ISX Form Factor Reference Design offers embedded design houses the benefits of a flexible and customizable engine with the processing performance to drive digital signage, information kiosks, intelligent systems, and Internet of Things devices where space and size is a constraint.

**Key Values**
- Reduces Development Time and Cost
- Builds Upon the Intel® Platform Design Guide and Passes Safety/Regulatory Prescan Test Criteria
- Simplifies the Path to Deliver Your Products to Your Customers
Reducing Development Time and Cost
Participating embedded design houses receive full design files for the reference design, which include the schematics (HDL), Gerber files (BRD), and thermal and chassis designs, designed and engineered in compliance with Intel Design Guidelines for stable and reliable operation.

With this validated platform, embedded design houses have unprecedented flexibility in determining how to leverage the Intel® ISX Form Factor Reference Design in their in-house development:
• Production Ready
• Customize

The Intel® Modular Board Design completes the critical routing traces between the Intel® architecture silicon and memory, as well as the main routing traces to associated components.

With 70% of the board design already completed, thanks to the Intel® Modular Board Design, embedded design houses can accelerate their design cycle and gain the advantage of earlier time-to-market for their products.

WHAT IS THE INTEL® ISX FORM FACTOR REFERENCE DESIGN PROGRAM

SYSTEM
• Production Ready
• 4×4 & 4×7 Form Factor (Fan or Fanless)
• System Sample & Board/Thermal IP Files
• System Level Validation & Regulatory Compliance Prescan Test Report

MOTHERBOARD
• Production Ready
• 4×4 Form Factor
• PCBA Sample & Board IP Files
• Board Level Validation & Regulatory Compliance Prescan Test Report

MODULAR BOARD DESIGN (MBD)
• For Customization Purpose
Production Ready

Adopting the Intel® ISX Form Factor Reference Design exactly simplifies development and speeds time to market. The board-level and system-level designs and validations have already been completed, together with regulatory compliance prescan test reports. Using the Intel® ISX Form Factor Reference Design, embedded design houses have a production-ready motherboard and system design in a small form factor without compromising computing performance.

Customize

The reference design is developed using the Intel® Modular Board Design, which completes the critical routing traces between the Intel® architecture silicon and memory, as well as the main routing traces to associated components. Because 70% of the board design is already completed, embedded design houses can incorporate the Intel® ISX Form Factor Reference Design into their custom designs and still gain the energy efficiency (superior performance-per-watt and lower thermal design power (TDP) rating), lower total cost of ownership, and efficient scalability that Intel® architecture provides.

This accelerated development time at board-level design and system-level design enables embedded design houses to speed up their time to market and capture pre-sales opportunities.

Builds Upon the Intel Platform Design Guide and Passes the Safety/Regulatory Prescan Test Criteria

By implementing the Intel® ISX Form Factor Reference Design into their designs, embedded design houses ensure their hardware designs comply with the Intel® Platform Design Guide and pass the regulatory prescan test criteria. Rather than focusing on interoperability, embedded design houses using the Intel® ISX Form Factor Reference Design can shift their investments towards delivering innovations in hardware, software, or services that differentiate their designs from their competitors.

Simplifying the Path to Deliver Your Products to Your Customers

Embedded design houses, original design manufacturers (ODM), and original equipment manufacturers (OEM) look for faster ways to offer their products either to the mainstream segment or to showcase their products for potential pre-sales opportunities. The Intel® ISX Form Factor Reference Design simplifies the development by opening many opportunities for accelerating the time to market and publicizing the latest innovations in the products. For example, to showcase a product or innovation, embedded design houses can adopt exactly the Intel® ISX Form Factor Reference Design and leverage on the Intel® loan or purchase program to obtain a development kit, which ensures the embedded hardware is fully integrated and prescan tested for reliability and regulatory compliance.

For embedded design houses that target the mainstream segment by offering ODM services or in-house custom designs, the Intel® ISX Form Factor Reference Design provides the design files, hardware, thermal, and mechanical design files, and relevant regulatory compliance prescan test reports. These deliverables give embedded design houses the capability to modify the reference design to specific ODM requirements. Because the Intel® ISX Form Factor Reference Design is based on the Intel® Modular Board Design, the exacting effort to route critical signal paths for the processor and supporting components are completed according to Intel Design Guidelines. Embedded design houses simply have to complete the remaining 30% of the design and deliver the final product.
Delivering the Solution Together

In the Intel® ISX Form Factor Reference Design program, Intel provides the deliverables for participating embedded design houses looking to achieve their designs or products. With these deliverables, whether the participating embedded design houses require a production-ready design or a customizable reference design, Intel is accelerating the time to market and driving innovation in the designs of intelligent systems.

<table>
<thead>
<tr>
<th>DELIVERABLES</th>
<th>PRODUCTION READY SYSTEM</th>
<th>CUSTOMIZE MODULAR BOARD DESIGN (MBD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design checklist overview</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Sample on loan</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Schematic and HDL files</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>StackUP and Layout (Allegro .brd)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Signal and power integrity</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Thermal and mechanical reference</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Board validation and regulatory prescan test reference report</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OS validated</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

For more information on the Intel® Intelligent System Extended Form Factor Reference Design program, visit